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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/814,573

03/31/2004

Dan Gealy

108298765US

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02/23/2009

PERKINS COIE LLP

PATENT-SEA

P.O. BOX 1247

SEATTLE, WA 98111-1247

EXAMINER

BUSHEY, CHARLES S

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

02/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/814,573	<b>Applicant(s)</b> GEALY ET AL.	
	<b>Examiner</b> Scott Bushey	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 9, 10, 14, 15, 19-21, 26, 27, 29, 30, 32, 33, 37-39 and 41-43 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 11, 16, 23, 34 and 44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 3,7,8,12,13,17,18,22,24,25,28,31,35,36,40,45 and 46.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 9, 14, 26, 27, 29, and 30 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Johnston et al (Figs. 1 and 2; col. 3, lines 52-63).

Applicant should note that the gas inlet (9) anticipates applicant's carrier gas conduit, while the tubes (15) anticipate the lift tubes of the application, the apertures (25) within the tubes (15) providing aspiration of liquid (precursor) into the tubes to mix with the gas passing therethrough, the tubes opening at their outlet ends within a headspace (109) above the liquid (17) region of the vessel, and the headspace delivering the mixture through a gas delivery line (107) from the headspace.

Applicant should also note that the materials worked on by a known apparatus or the intended use of a known apparatus cannot be considered to lend patentable weight to the apparatus claims.

3. Claim 19 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hattori (Fig. 7; col. 9, lines 40-57).

Applicant should note that the materials worked on by a known apparatus or the intended use of a known apparatus cannot be considered to lend patentable weight to the apparatus claims.

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4. Claim 29 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patterson et al (Fig. 10).

Applicant should note that the materials worked on by a known apparatus or the intended use of a known apparatus cannot be considered to lend patentable weight to the apparatus claims.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 32, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnston et al taken together with the admitted prior art.

Johnston et al (Figs. 1 and 2; col. 3, lines 52-63) as applied above substantially disclose applicant's invention as recited by instant claims 32, and 37-39, except for the gas delivery line from the apparatus being connected to a gas phase reaction chamber.

Applicant admits at paragraph [0007] of the instant application that it is well known within the art to connect a gas delivery line of a gas/liquid contacting ampoule to a gas phase reaction chamber of a film deposition apparatus. In view of the admitted prior art, it would have been obvious for an artisan at the time of the invention, to connect the gas/liquid delivery line of Johnston et al to a gas phase reaction chamber, if it were desired to utilize the gas/liquid product stream from the Johnston et al apparatus for providing a film on a substrate in a film deposition processing apparatus.

8. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori taken together with the admitted prior art.

Hattori (Fig. 7; col. 9, lines 40-57) as applied above substantially disclose applicant's invention as recited by instant claim 42, except for the gas delivery line from the apparatus being connected to a gas phase reaction chamber. Applicant should note that the element (73) of Hattori anticipates applicant's precursor exposure assembly, as broadly recited by instant claim 42.

Applicant admits at paragraph [0007] of the instant application that it is well known within the art to connect a gas delivery line of a gas/liquid contacting ampoule to a gas phase reaction chamber of a film deposition apparatus. In view of the admitted prior art, it would have been obvious for an artisan at the time of the invention, to connect the gas/liquid delivery line of Hattori to a gas phase reaction chamber, if it were

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desired to utilize the gas/liquid product stream from the Hattori apparatus for providing a film on a substrate in a film deposition processing apparatus.

9. Claims 4, 10, 15, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnston et al taken together with Hattori.

Both references have been applied above and each alternatively disclose means for contacting a precursor liquid with a carrier gas stream to form a gas/liquid mixture stream for downstream utilization. Hattori additionally includes a precursor exposure assembly (73) within the headspace of the contact vessel. It would have been obvious for an artisan at the time of the invention, to modify the apparatus as taught by Johnston et al, to include a precursor exposure assembly within the headspace of the contact vessel, in view of Hattori, since such would insure a more complete contact between the phases by increasing the residence time of the phases within the contact vessel prior to exit through the gas delivery outlet.

10. Claims 33, 41, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference combination as applied to claims 32, and 37-39 in paragraph 7 above, and further in view of Hattori.

The primary reference combination as applied above suggests means for contacting a precursor liquid with a carrier gas stream to form a gas/liquid mixture stream for downstream utilization. Hattori additionally includes a precursor exposure assembly (73) within the headspace of the contact vessel. It would have been obvious for an artisan at the time of the invention, to modify the apparatus as suggested by the primary reference combination, as applied to claims 32, and 37-39 in paragraph 7

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above, to include a precursor exposure assembly within the headspace of the contact vessel, in view of Hattori, since such would insure a more complete contact between the phases by increasing the residence time of the phases within the contact vessel prior to exit through the gas delivery outlet.

***Allowable Subject Matter***

11. Claims 5, 6, 11, 16, 23, 34, and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose or suggest the precursor exposure assembly being in the form of a plurality of trays and positioned at least partially within the headspace of the vessel to increase the contact surface area between the precursor and carrier gas.

***Response to Arguments***

12. Applicant's arguments filed December 22, 2008 have been fully considered but they are not persuasive. With regard to the arguments set forth against the application of the Johnston et al reference to independent claim 1, such are not persuasive since the claims are not so specific as to require the "headspace" to exist within the precursor region wherein the headspace within the precursor region is defined at its lower limit by the surface of the precursor within the precursor region. As currently recited, instant claim 1 only requires that a "headspace above the precursor region", a broadly recited structure that is clearly met by the teaching of Johnston et al as applied above and in the previous Office action. Applicant's reference, made in the remarks section of the



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amendment filed December 22, 2008, to the Figures of the instant application, is not persuasive since the claims, while read in light of the specification and disclosure, are not read as if portions of the specification were imported thereto. Applicant's other arguments relative to the rejection of claim 1 and its dependents over Johnston et al, which are directed to the intended use of the claimed apparatus and the materials worked on by the claimed apparatus are not at all persuasive, since the applied prior art apparatus is capable of operating in the manner as set forth by the claims, if such were desired. Claims 2, 9, 14, 26, 27, 29, and 30 remain rejected over Johnston et al since applicant relies upon the arguments made relative to instant claim 1.

With regard to the arguments set forth relative to the rejection of claim 19 over Hattori, applicant should note that nothing present in the claim would require precursor flow through the conduit (plugged port at 68) through the apparatus cover during the gas-liquid contact operation. Claim 19, as currently recited simply requires a conduit (tubular opening plugged by element 68) that allows precursor to be input into the apparatus at some point. Further, the screen (73) of the reference will clearly intercept and spread thereon some of the liquid input through the opening in the cover of the device, thereby providing a "precursor exposure assembly".

With regard to applicant's argument that Patterson fails to disclose or suggest instant claim 29 by failing to disclose or suggest "vaporizing precursor into a carrier gas", the Examiner would greatly appreciate applicant pointing out where in claim 29 such language is set forth. The Examiner would also appreciate if applicant could point to the phraseology in claim 29 that requires that the "carrier gas is driven through the

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precursor, and is taken from above the headspace to the reaction chamber while the carrier gas contains vaporized precursor”, as alleged in the remarks.

With regard to the remaining claims which applicant alleges are allowable for at least the reasons as set forth in the arguments directed to claim 1, the rejections thereof must remain, since the arguments against the rejection of claim 1 have been rebutted above.

With regard to the argument that the applied prior art is non-analogous art and therefore the rejections based thereon must be withdrawn and the claims allowed, such is not persuasive since all of the prior art of record applied herein is directed to improving contact between gas and liquid phases, as is the instant application and therefore all of the applied prior art is analogous and must remain in force against the instant broadly recited apparatus claims.

### ***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is 571 272-1153. The examiner can normally be reached on M-Th 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Scott Bushey  
Primary Examiner  
Art Unit 1797

/S. B./  
2-6-09

/Scott Bushey/  
Primary Examiner, Art Unit 1797

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